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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,679	08/28/2003	Takakazu Tanaka	003500.017516.	5645
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FITZPATRICK CELLA HARPER & SCINTO			DOTE, JANIS L	
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NEW YORK, NY 10112			PAPER NUMBER	

1756

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/649,679

Applicant(s)

TANAKA ET AL.

Examiner

Janis L. Dote

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 11-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4, 11-14, 16-19, 21-24 and 26-29 is/are allowed.
- 6) ☒ Claim(s) 31-35 is/are rejected.
- 7) ☒ Claim(s) 5, 15, 20, 25 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/18/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

1. The examiner acknowledges the amendments to claims 1-5, 11-15, and 21-30 and the addition of claims 31-35 set forth in the amendment filed on Dec. 10, 2004. Claims 1-5 and 11-35 are pending.

2. The objections to the drawings set forth in the office action mailed on Sep. 15, 2004, paragraphs 2 and 3, have been withdrawn in response to the amended paragraph filed on Dec. 10, 2004, at page 56, line 12, of the specification.

The rejection of claims 1-30 under 35 U.S.C. 112, second paragraph, set forth the office action mailed on Sep. 15, 2004, paragraph 7, has been withdrawn in response to the amendments filed on Dec. 10, 2004, to claims 1-5 and 21-30.

The rejections of claims 1-30 under 35 U.S.C. 112, second paragraph and first paragraph, set forth the office action mailed on Sep. 15, 2004, paragraphs 8 and 10, respectively, have been withdrawn in response to the amendments filed on Dec. 10, 2004, to claims 1-5 and 21-30.

The rejections of claims 1-5 under 35 U.S.C. 102(b)/103(a) over US 3,265,496 (Fox), of claims 16-20 under 35 U.S.C. 102(b)/103(a) over Fox, of claims 11-15 under 35 U.S.C. 103(a) over Fox, and of claims 21-30 under 35 U.S.C. 103(a) over US 5,430,526 (Ohkubo) combined with Fox, set forth in

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paragraphs 14-17, respectively, have been withdrawn in response to the amendments filed on Dec. 10, 2004, to claims 1-5 and 21-30. The amendments to claims 1, 21, and 26 add the limitation that one of the groups Z_{11} to Z_{15} in Formula (1) is a substituted or unsubstituted dibenzothiophenylene group, and the balance are each a substituted or unsubstituted biphenylene group. The amendments to claims 2-5, 22-25, and 27-30 add the limitation one of the Z groups in Formulas (2), (3), (4), or (5) is a substituted or unsubstituted dibenzofuranylene group or a substituted or unsubstituted dibenzothiophenylene group, and the balance of the Z groups are each a substituted or unsubstituted biphenylene group. Fox does not teach or suggest a polyarylamine compound comprising dibenzofuranylene or dibenzothiophenylene groups as required in the instant claims.

The rejections of claims 1, 6, 21, and 26 under 35 U.S.C. 102(e)/103(a) over US 2004/0048179 A1 (Tanaka'179), and of claim 16 under 35 U.S.C. 102(e)/103(a) over Tanaka'179, set forth in the office action mailed on Sep. 15, 2004, paragraphs 18 and 19, respectively, have been withdrawn in response to the amendments filed on Dec. 10, 2004, to claims 1, 21, and 26 as described supra. Tanaka does not disclose a polyarylamine compound comprising dibenzothiophenylene groups as

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recited in instant claims 1, 21, and 26. Moreover, applicants have removed Tanaka as prior art under 35 U.S.C. 103(c).

Applicants' representative has shown that Tanaka and the instant application were commonly owned by the same entity at the time the invention in the instant application was made. See applicants' response filed on Dec. 10, 2004, page 29, lines 18-21.

3. The examiner notes that the following terms recited in instant claims 21-30 are means-plus-function limitations covered by 35 U.S.C. 112, sixth paragraph: "exposure means," "charging means," "developing means," "transfer means," and "cleaning means." No structures for the terms are recited in the claims. The only definitions for the "developing means," "cleaning means," and "transfer means" are provided by instant Fig. 4. The apparatus in Fig. 4 comprises a developing means 5, a charging means 3, cleaning means 9, and a transfer means 6. See the instant specification, page 54, line 23, to page 56, line 11. The instant specification further discloses at page 56, lines 9-10, that the "charging means 3" in Fig. 4 can be a "contract charging means making use of a charging roller or the like as shown in Fig. 4." No other structure of a charging means is disclosed in the specification. The specification does

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not define the term "exposure means." However, the specification, at page 57, lines 2-8, discloses that the exposure light 4 in Fig. 4 can be a laser beam, an LED array or a liquid-crystal shutter array.

4. The examiner notes that the instant specification at page 16, line 18, to page 17, line 2, discloses that the divalent aromatic carbocyclic group or divalent aromatic heterocyclic group recited in the instant claims also includes divalent aromatic carbocyclic groups or divalent aromatic heterocyclic groups "formed by bonding through a single bond, a substituted or unsubstituted alkylene group having 1 to 4 carbon atoms, a substituted or unsubstituted silylene group having 1 to 4 silicon atoms, an oxygen atom or a sulfur atom."

The examiner also notes that the instant specification at page 25, lines 20-23, defines the phrase "synthesized by successive synthesis" as being synthesized by "a method for synthesis in which the reaction of a raw material with a material to be reacted is carried out in a multi-stage process to form a single compound as a chief product."

5. Claims 5, 15, 20, 25, and 30 are objected to because of the following informalities:

Claims 5, 25, and 30 recite the phrase "wherein one of Z₅₁ to Z₅₉ in Formula (5), one is a substituted or unsubstituted dibenzofuranylene group . . . " (emphasis added). The second recited "one" is redundant.

Appropriate correction is required.

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 3,265,496 (Fox).

Fox discloses an electrophotographic photoconductor comprising an electrically conductive support and a photoconductive layer comprising a polyarylamine compound that meets chemical formula (2) recited in instant claim 32. See col. 3, lines 32-40; example 1-synthesis of polymer No. 1 at col. 6; and example 6 at col. 7. Polymer No. 1 comprises a polyarylamine compound that comprises seven nitrogen atoms, where each nitrogen atom is bonded to a phenyl group, a phenylene group, and biphenylene group. The polyarylamine compound is obtained by reacting N,N'-diphenylbenzidine and p-diiodobenzene in the presence of potassium carbonate and a copper powder. The analytical calculation (weight%) for

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$C_{120}H_{89}N_8I$ is C, 80.4; H 5.1; N, 6.3; I, 7.2. Found C, 80.2; H 6.0; N 6.1; I, 8.0. Based on the chemical formula $C_{120}H_{89}N_8I$, the molecular weight of the polyarylamine is 1,768, which is within the range of 1,500 to 4,000 recited in instant claim 32. Based on the analytical calculation of Polymer No. 1 disclosed by Fox, it is reasonable to conclude that the polyarylamine compound is present in polymeric No. 1 composition in an amount of 90 to 100 % by weight. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Fox does not identify polymer No. 1 as a charge transporting material as recited in instant claim 32. However, as discussed above, the polyarylamine compound in polymer No. 1 meets formula (2) recited in instant claim 32. Thus, it is reasonable to conclude that the polymer No. 1 of Fox is a charge transporting material. The burden is on applicants to prove otherwise. Fitzgerald, supra.

Although Fox only exemplifies a polyarylamine compound comprising seven nitrogen atoms, where each nitrogen atom is bonded to a phenyl group, a phenylene group, and biphenylene group, Fox teaches that the polyarylamine compound can have from 1 to 12 units, where each unit comprises a nitrogen atom. See Fox, col. 2, lines 19-50, and reference claims 1 and 5. Thus, a person having ordinary skill in the art would readily recognize

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that Fox anticipates electrophotographic photosensitive members comprising polyarylamine compounds that meet chemical formulas (1), (3), (4), and (5) recited in instant claims 31, 33, 34, and 35, respectively, which comprise 6, 8, 9, and 10 nitrogen atoms, respectively, where each nitrogen atom is bonded to a phenyl, a phenylene and biphenylene group.

Fox does not explicitly disclose that the polymeric composition comprises 100 % by weight of the polyarylamine compound as recited in the instant claims. However, in synthesis example 1, Fox purifies the polyarylamine compound by chromatography. As discussed in supra, the analytical calculation of the weight distribution of the resulting polyarylamine compound, $C_{120}H_{89}N_8I$, is very close to the found analytical weight distribution. Fox further discloses that photosensitive members comprising said polyarylamine compound have "improved permanence" in storage stability. Col. 8, lines 3-9.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Fox, to further purify the polyarylamine compound such that the polyarylamine compound is present in the amount of 100 wt% of the polymeric composition, and to use the resulting polyarylamine compound in the photosensitive member disclosed by Fox, because that person

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would have had a reasonable expectation of successfully obtaining an electrophotographic photosensitive member having the benefits disclosed by Fox.

Applicants' arguments filed on Dec. 10, 2004, have been fully considered but they are not persuasive.

Applicants assert that the charge material present in a proportion of 100% by weight based on the total weight of the material could not be deemed present in Fox. Applicants assert that the charge-transporting materials disclosed by Fox are polymers of triphenylamines. Applicants assert that a "polymer is typically a mixture of chains having different molecular weights. The range of molecular weights is generally a bell-shaped curve in which very low to very high molecular weights are present" Applicants further assert that "[I]n Fox, it would be understood that a mixture of materials having a broad spectrum of molecular weights is present, rather than a polymeric material having a specific molecular weight."

However, applicants' assertions are mere attorney arguments that are not supported by any objective evidence. Moreover, applicants have not addressed the rejection. The rejection is not under 102, but under 103. The rejection does not assert or assume that the Fox polyamine compound comprises 100% by weight of the polyamine as recited in the instant claims. Rather, the

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rejection states that it would have been obvious for a person having ordinary skill to further purify the polyamine compound disclosed by Fox to obtain a polyamine compound comprising 100 % by weight of said compound. The Fox compound in synthesis 1 has the chemical formula $I-[C_6H_4-N(C_6H_5)-C_6H_4-C_6H_4-N(C_6H_5)]_4-H$. Said compound has four repeat units $-C_6H_4-N(C_6H_5)-C_6H_4-C_6H_4-N(C_6H_5)-$; or four repeat units $-C_6H_4-N(C_6H_5)-$ and four repeat units $-C_6H_4-C_6H_4-N(C_6H_5)-$. The Fox compound in synthesis 1 is not a long-chain polymer, as characterized by applicants, which inevitably comprises polymers having a distribution of chain lengths. Applicants have not come forward with any probative evidence that it would not have been obvious to further purify the Fox polyarylamine compound. Accordingly, the rejection stands.

8. Claims 1-4, 11-14, 16-19, 21-24, and 26-29 are allowable over the prior of record.

Claims 5, 15, 20, 25, and 30 would be allowable if rewritten or amended to overcome the objection set forth in this Office action.

The claims are allowable over the prior art of record for the reasons discussed in paragraph 2, supra, which are incorporated herein by reference.

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9. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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JLD

Feb. 24, 2005

Janis L. Dote
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PRIMARY EXAMINER
GROUP ~~1530~~
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